Assessment of Electric Vehicle Strategies Among Local Governments

EXECUTIVE SUMMARY

Prepared by:
Sean Bailey, UBC Sustainability Scholar, 2018

Prepared for:
Erik Blair, Sr. Policy and Planning Analyst, Air Quality and Climate Change, Metro Vancouver

August, 2018

Table of Contents

Introduction

Transportation accounts for 42% of the Vancouver region's total greenhouse gas emissions. 70% of the region's trips were made in personal motor vehicles in 2011. They account for 77% of total kilometres travelled (Metro Vancouver, 2018). Reducing greenhouse gas emissions from vehicles is a crucial component in the regional effort to reduce climate impact and improve air quality. While efforts to encourage alternative modes of transportation are ongoing, the private automobile is still the dominate mode of transportation in the Vancouver region and will remain so for the foreseeable future. As this is the case, it is important to support efforts to transition to electric vehicles. Metro Vancouver is prioritizing the electrification of vehicles at both the corporate and regional level. This report aims to provide insight into best practices in EV adoption strategies in order to inform the development of a Metro Vancouver Electric Vehicle Roadmap.

Background

Metro Vancouver has already taken steps towards reducing GHG emissions through EV adoption at both a corporate and regional level. In 2016, the Metro Vancouver Board adopted a policy to transition the corporate fleet to low carbon vehicles. This policy set an emissions standard for each vehicle class that would be reviewed annually. Further, it allows for the purchase of the highest standard possible in each class as long as it meets operational needs and lifecycle costs are taken into account. In 2016, Metro Vancouver became a member of West Coast Electric Fleets. This membership includes a pledge to purchase 10% electric vehicles for their fleet. Metro Vancouver has also taken a role in EV outreach campaigns. These campaigns are meant to increase public awareness and perception of EV ownership advantages. Emotive is a campaign the Metro Vancouver has been involved with that raises awareness throughout BC. Other campaigns are aimed at more specific audiences such as property managers or residents of multi-family dwellings (Metro Vancouver, 2018).

There are two legislations that give Metro Vancouver some authority to develop programs, policies and regulations that address GHG emissions from transportation. One is British Columbia's *Environmental Management Act*. This act gives Metro Vancouver authority to "provide the service of air pollution control and air quality management and, for that purpose, the board of the regional district may, by bylaw, prohibit, regulate and otherwise control and prevent the discharge of air contaminants". Metro Vancouver currently regulates air quality by

requiring permits in order for industries to emit pollutants. They do not regulate industry GHG emissions from transportation. The second legislation is the *Local Government (Green Communities) Statutes Amendment Act, (Bill 27)*. This act made addressing GHG part of the responsibility of local government by requiring that regional growth strategies (such as Metro Vancouver 2040) include targets for reducing GHG emissions (Metro Vancouver, 2018).

Research Methodology

Research for this report was done primarily through internet literature. The first step was to become familiar with the current policies in Metro Vancouver. This included finding what EV strategies and policies have been implemented or are planned to be implemented, if any, by the member municipalities of Metro Vancouver. Following that, research was done on general strategies and policies of leading regions and municipalities in North America and around the world. There were two levels to this step. The first was to understand what the typical strategies were addressing things such as minimum EV charging station requirements for new buildings, incentive programs, public charging locations, etc. After this, research was done to find what sorts of actions cities were doing that were unique and not just "par for the course" amongst environmentally progressive cities.

Specific research was performed to find best practices involved in adopting EVs into corporate and municipal fleets. Finally, phone interviews were done with various experts in the EV field from fleet managers to energy planners. These interviews allowed for more specific conversation regarding the planning process, implementation, and EV fleet management. The collected research was then organized into different categories (some actions could be placed into two different categories). These categories were policy, regulation, administration, programs, and leadership.

Summary

Electric Fleet Vehicles

The electrification of fleet vehicles is becoming more and more relevant, particularly amongst local governments as they look to strengthen their leadership in reducing GHG emissions. Fleet vehicles can be considered anything from passenger vehicles to heavy-duty utility vehicles. Many cities are looking to electrify their fleet beyond just passenger vehicles. London is aiming to have

all single-deck buses be ZEVs (Zero Emission Vehicle) by 2020 (Hall et al 2017). For the purposes of this report however, focus will be placed on the electrification of light-duty vehicles. It is still important to note that most of the leading EV cities are working towards electrifying beyond light-duty.

Some of the most important findings for fleet electrification came from learning about the process of how goals are set for the future. When setting goals for EV fleet adoption, having the fleet manager(s) at the table is crucial. Data needs to be collected about what kinds of trips are being made. Are there multiple stops associated with each trip? What are the most popular trips/destinations? Once these are identified, it is much easier to identify what is viable for the fleet (Gilbert 2018). It was found to be common for cities to look at other cities for a baseline. For instance, cities in California see themselves as in competition with one another in environmental policy. They use this competition as a way to set a standard. From this standard they would then work backwards towards a realistic goal (Peters 2018).

As far as timelines for implementation, incremental short-term goals were generally favored over larger long-term goals by cities/organizations that were more successful in their EV fleet programs. There were two main reasons for this. First, the changing technology of electric vehicles makes it difficult to identify what could actually be achievable by, for instance, 2050. Secondly, setting ambitious yet manageable short-term goals better insures that progress will be achieved right away (Peters 2018). For example, instead of saying, “Achieve a 100% electric fleet by 2050” a better alternative would be, “No new non-electric vehicles purchased when replacing older fleet vehicles by 2025.” It is also advised that cities and organizations should maintain their normal replacement timeline for their fleet vehicles. This will not only make the transition more financially realistic, but it will also help inform timeline decisions (Peters & Northup 2018).

Management of electric fleets takes some adjustment from non-electric fleets. Being able to manage the electricity pricing is one area that has been identified to cause problems. Peak hour pricing or demand charges have caused unpredictability in the cost of charging fleet vehicles (Freedman 2018). Lower cost of ownership is one of the major advantages of converting to an electric fleet. But if the fleet is not utilized correctly, the cost of ownership may actually become a disadvantage. A reliable solution to this is using telematics products and services with EV-specific capabilities. These will collect data that can be used to develop a minimum utilization standard in order to maximize the return on investment (Center for Sustainable Energy 2017 and Fleets For The Future 2016). An easy way to achieve a higher utilization standard immediately would be to prioritize usage of the new electric fleet vehicles over the older non-electric vehicles.

Specialized training for all vehicle users must be introduced when electric vehicles are implemented into the fleet. This is crucial for maximizing utilization. Ill-informed drivers have been found to be less likely to choose an EV from a motor pool or remember to plug in vehicles when they return. The higher performing agencies more often than not have incorporated some level of training. This training can be done in-house, but vehicle vendors often provide it as a service (Center for Sustainable Energy 2017).

The most helpful information regarding fleet vehicles came from the interview portions of the research. This is because the experiences of planners and fleet managers go beyond the sort of information that is publically available. The interviewees communicated important lessons learned before, during, and after the transition to electric vehicles began. This indicates that it is important to continue to collect data and adjust how the fleet is managed in order to maximize fleet utilization and also learn from experiences.

Regional/Local Government Activities

This section will briefly discuss opportunities, challenges, and general trends of the transition towards electric vehicles amongst regions and local governments. It will discuss policy and actions regarding incentives, infrastructure, and leadership/outreach.

One of the most important ways that governments at all levels have done their part to promote electric vehicle adoption is to provide incentives to EV buyers. What countries such as Norway, Denmark, as well as states in the US have done to incentivize EVs have been perhaps the largest factor to their success. It is well understood that the success of EV adoption in California municipal regions would not be anywhere near where it is if it weren't for aggressive state policies (Freedman and Peters 2018). But there are plenty of incentives that municipalities can provide on their own. Parking is an area that is popular. London and Oslo provide free on street parking for electric vehicles (Haugneland et al. 2017). Amsterdam, which has a wait list for parking passes, puts EV owners at the front of the list. In order to fund incentive programs such as these, some governments have put an additional price on carbon. An example would be congestion charges in London (EVs are exempt from the charge). In an attempt to de-incentivize carbon emitting vehicles, Amsterdam is allowing EVs into environmental zones that ban polluting vehicles (Plan Amsterdam 2016). Overall, these and other incentive programs have been found to be useful for cities particularly in early stages of EV adoption (Gilbert 2018).

The implementation of charging infrastructure is a challenge for cities that generates a number of questions. One of the first questions is whether or not to connect the charging infrastructure to a central system through Wi-Fi or to install each station as a standalone, unconnected system.

The unconnected systems are cheaper and easier to implement right away but do not offer the advantages of a connected system. Municipalities that began by installing unconnected systems tend to now be switching to connected systems in order to gather the useful data that they can provide. It is important to note that a municipality can manage a connected system on its own, but it is more common for municipalities to have a third-party manage it (Fishbone et al. 2017).

A commonly referred to challenge with charging infrastructure is where to provide it. 80% of charging is done at home when there is access to a charger. If there is access to a charger at both home and work for an EV owner, they will charge at both 97% of the time (Fishbone et al. 2017). It becomes more difficult however when owners of EVs have no parking at home and must park on the street. In Amsterdam, where there is very little off street parking for residents, EV owners can apply for a charging station to be placed on their street or very near it. This is considered a market-driven approach to providing charging infrastructure (Plan Amsterdam 2016). This approach is opposed to a top-down approach that would require the city to predict EV adoption and prioritize on its own where charging stations should be located.

Residents of multi-family units also have trouble getting chargers installed in their parking lots. Most cities with an EV strategy have similar policies regarding minimum charging infrastructure requirements in new buildings. But with older buildings where there is no built-in infrastructure, residents are more reluctant to purchase an EV. In California, property managers are required to provide charging infrastructure when residents ask for it. Although this is the case, residents still have to wait a long time before they can get the charger installed. This can be due to a number of reasons, but it is largely due to the lack of information and education available to the property managers and residents to help them with the process (Peters 2018). This leads to the next topic of leadership and outreach.

Efforts to make the process of both purchasing an EV and installing chargers as easy and manageable as possible has been a key strategy for cities as EV adoption has grown. For instance, potential buyers of EVs may or may not know that there are rebates and other financial incentives available to them. If they are aware, it isn't always clear how those can be taken advantage of or whether or not a particular buyer is qualified. One of the best ways that has been found to help rectify this is for cities and EV organizations to reach out to dealerships. The aim of this is to make sure that the dealerships in the region are educated on how their customers can take advantage of any federal, state, provincial, or local incentives (Freedman 2018). Another outreach strategy that has proven to be useful is to learn about the experiences of residents and property managers who have gone through the process of getting EV infrastructure installed on their property. From this, cities can identify persistent barriers that

keep the process from being as transparent and manageable as it could be (Gilbert & Freedman 2018).

Public outreach has been found to be most useful to cities when the target audience of the outreach is as specific as possible (i.e. multi-family property managers who have installed charging units within the last year). The information that is sought to be gathered from these interactions should be as specific as possible as well (Gilbert 2018). Partnerships with EV related companies, organizations, and stakeholders have also proven to be valuable for cities. When creating their EV readiness plan, San Francisco created an ad hoc working group that consisted of automobile manufacturers, charging infrastructure companies, utility companies, energy finance groups, regional planning groups, and EV nonprofits. The groups involved helped activate one another and push the agenda forward in the early stages (Peters 2018). These sorts of stakeholder groups can also create opportunity for new sources of funding EV projects. This is particularly the case with vehicle manufactures. Nissan paid for customer charging for an entire year at one thousand Kansas City Power and Light charging stations in the Kansas City municipal region. This would not have happened if dialogue hadn't happened between Kansas City Power and Light, Nissan, and the Mid-America Regional Council (Gilbert 2018). This points to the important leadership role that city governments and regional organizations play in activating stakeholders.

References

Center For Sustainable Energy. "Electric Vehicles Require New Tactics for Tracking Fleet Utilization" August 2017. Online Access: https://energycenter.org/blog/electric-vehicles-require-new-tactics-tracking-fleet-utilization

Fishbone, A., Shahan, Z., & Badik, P. "Electric Vehicle Charging Infrastructure: Guidelines for Cities" *Clean Technica* & *Greenway*. December 2017. Online Access: https://cleantechnica.com/files/2018/04/EV-Charging-Infrastructure-Guidelines-for-Cities.pdf

Fleets for the Future. "Electric Vehicle Procurement Best Practices Guide" 2016. Online Access: https://static1.squarespace.com/static/57a0a284d2b857f883096ab0/t/58594c0b20099e7458106015/1482247181025/Electric+Vehicle+Procurement+Best+Practices+Guide.pdf

Freedman, Susan. Phone Interview. July 2018.

Gilbert, Kelly. Phone Interview. July 2018.

Hall, D., Moultak, M., & Lutsey, N. "Electric Vehicle Capitals of the World" *The International Council on Clean Transportation*. March 2017. Online Access: https://www.theicct.org/sites/default/files/publications/Global-EV-Capitals_White-Paper_06032017_vF.pdf

Haugneland, P. et al. "Put a Price on Carbon to Fund EV Incentives – Norwegian EV Policy Success." *EVS30 Symposium*. October 2017. Online Access: https://wpstatic.idium.no/elbil.no/2016/08/EVS30-Norwegian-EV-policy-paper.pdf

Metro Vancouver. "Climate 2050 Discussion Paper" April 2018. Online Access: http://www.metrovancouver.org/services/air-quality/AirQualityPublications/AQ_C2050-DiscussionPaper.pdf

Northup, Bradley. Phone Interview. July 2018.

Peters, Lars. Phone Interview. July 2018.

Plan Amsterdamn. "Electric Mobility is Here." 2016. Online Access: https://www.amsterdam.nl/publish/pages/799470/planam-03-2016_art1.pdf